IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Mohamed RATNI et al.

U.S. Serial No.: Filed Concurrently Herewith

Title of Invention: DEMODULATOR STRUCTURE UTILIZING DC SWITCHES

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Date of Deposit: July 9, 2001

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box Patent Application (35 U.S.C. 111)
Washington, D.C. 20231

Sir:

Before the issuance of the first Office Action, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 4-13 and 17-19 as follows:

4. (Amended) I/Q- Demodulator according to claim 2,

characterized in that

the digital processing unit (19) comprises an adaptive baseband filtering unit (23).

5. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

the output signal of the power sensors (13) can be selectively passed through different low-pass-filters (14) having different cut-off-frequencies.

6. (Amended) I/Q-Demodulator according to claim 1,

characterized by

switches (15) for the selection of the low-pass-filters (14).

7. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

the n-port is a five-port-junction (1).

8. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

the n-port is a four-port-junction (16) and the demodulator is a (M)QAM or (M)PSK demodulator.

9. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

the multiplexing means is a DC-switch (8) with a switching time of $\frac{1}{n-2}$ times the symbol duration.

10. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

before or after the multiplexing means (8) at least one DC-amplifier (17) is provided.

11. (Amended) I/Q-Demodulator according to claim 1,

characterized by

a low-pass-filter (20) following the multiplexing means (8) and having a cut-off-frequency of $\frac{n-2}{2}B$ whereby the output signal of the power sensor (13) is a low-pass-filtered with a cut-off-frequency of $\frac{B}{2}$ and B is the maximum bandwidth of the RF signal (2) to be demodulated.

12. (Amended) I/Q-Demodulator according to claim 1,

characterized in that

the n-port (1, 16), the power-sensors (7) and said multiplexing means (8) are integrated on one single chip (18).

13. (Amended) Software radio device

characterized in that

it comprises an I/Q-demodulator (21) according to claim 1.

17. (Amended) Method according to claim 14,

characterized in that

power signals (13) can be selectively filtered (14) with different cut-off-frequencies.

18. (Amended) Method according to claim 14,

characterized in that

the step of multiplexing is implemented by a DC-switch (8) with a switching time $\frac{1}{n-2}$ of the symbol duration.

19. (Amended) Method according to claim 14,

characterized in that

the multiplexed power signals are low-pass-filtered (20) with a cut-off-frequency of $\frac{n-2}{2}B$

whereby the non-multiplexed power signals are low-pass-filtered with the cut-off-frequency of $\frac{B}{2}$, where B is the maximum bandwidth of the RF signal (2) to be demodulated.

REMARKS

Claims 1-19 remain in the application. Claims 4-13 and 17-19 have been amended to eliminate multiple dependencies. Attached hereto is a marked up version of the changes made to claims 4-13 and 17-19 by the current amendment. The attached page is captioned **"Version with markings to show changes made."** The filing fee has been calculated based upon these amendments to the claims.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

4. (Amended) I/Q- Demodulator according to claim 2 ~~or 3~~,

characterized in that

the digital processing unit (19) comprises an adaptive baseband filtering unit (23).

5. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized in that

the output signal of the power sensors (13) can be selectively passed through different low-pass-filters (14) having different cut-off-frequencies.

6. (Amended) I/Q-Demodulator according to ~~anyone of claims 1 to 5~~ claim 1,

characterized by

switches (15) for the selection of the low-pass-filters (14).

7. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized in that

the n-port is a five-port-junction (1).

8. (Amended) I/Q-Demodulator according to ~~anyone of claims 1 to 6~~ claim 1,

characterized in that

the n-port is a four-port-junction (16) and the demodulator is a (M)QAM or (M)PSK demodulator.

9. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized in that

the multiplexing means is a DC-switch (8) with a switching time of $\frac{1}{n-2}$ times the symbol duration.

10. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized in that

before or after the multiplexing means (8) at least one DC-amplifier (17) is provided.

11. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized by

a low-pass-filter (20) following the multiplexing means (8) and having a cut-off-frequency of $\frac{n-2}{2} B$ whereby the output signal of the power sensor (13) is a low-pass-filtered with a cut-off-frequency of $\frac{B}{2}$ and B is the maximum bandwidth of the RF signal (2) to be demodulated.

12. (Amended) I/Q-Demodulator according to ~~anyone of the preceding claims~~ claim 1,

characterized in that

the n-port (1, 16), the power-sensors (7) and said multiplexing means (8) are integrated on one single chip (18).

13. (Amended) Software radio device

characterized in that

it comprises an I/Q-demodulator (21) according to ~~anyone of the proceeding claims~~ claim 1.

17. (Amended) Method according to claim 14 ~~or 15~~,

characterized in that

power signals (13) can be selectively filtered (14) with different cut-off-frequencies

18. (Amended) Method according to ~~anyone of claims 14 to 17~~ claim 14,

characterized in that

the step of multiplexing is implemented by a DC-switch (8) with a switching time $\frac{1}{n-2}$

of the symbol duration.

19. (Amended) Method according to ~~anyone of claims 14 to 18~~ claim 14,

characterized in that

the multiplexed power signals are low-pass-filtered (20) with a cut-off-frequency of $\frac{n-2}{2} B$

whereby the non-multiplexed power signals are low-pass-filtered with the cut-off-frequency of

$\frac{B}{2}$, where B is the maximum bandwidth of the RF signal (2) to be demodulated.